HW answers:

26) (a) $\mu_{X--20} = 60$

$\sigma_{X--20} = 12$

(b) $\mu_{0.5Y} = 6$

$\sigma_{0.5Y} = 1.5$

(c) $\mu_{X+Y} = 92$

$\sigma_{X+Y} = 12.37$

(d) $\mu_{X--Y} = 68$

$\sigma_{X--Y} = 12.37$

(e) $\mu_{Y1+Y2} = 24$

$\sigma_{Y1+Y2} = 4.2$

27) (a) $\mu_{0.8Y} = 240$

$\sigma_{0.8Y} = 12.80$

(b) $\mu_{2X--100} = 140$

$\sigma_{2X--100} = 24$

(c) $\mu_{X+2Y} = 720$

$\sigma_{X+2Y} = 34.18$

(d) $\mu_{3X--Y} = 60$

$\sigma_{3X--Y} = 39.40$

(e) $\mu_{Y1+Y2} = 600$

$\sigma_{Y1+Y2} = 22.63$

15) (a) $E(X) = 1.7$

(b) $SD(X) = 0.90$ **per hour**

31) $\mu_{X+X+X+X+X+X+X+X} = 13.6$

$\sigma_{X+X+X+X+X+X+X+X} = 2.546$

35) (a) there is a large variation (spread) in the amount of claims. Most claims are small (minor house damage), however there are also very large claims (major house damage).

(b) $\mu_{X+X} = 150 + 150 =$ ***\$300***

$\sigma_{X+X} = \sqrt{(6000^2) + (6000^2)} =$ ***\$8485.28***

(c) $\mu_{X+X+\ldots\ldots X+X} = 10{,}000*(150) =$ ***\$1,500,000***

$\sigma_{X+X+\ldots\ldots X+X} = (6000^2) + (6000^2) + \ldots\ldots = \sqrt{10{,}000(6000^2)} =$

$=$ ***\$600,000***

(d) yes, the company is likely to be profitable. If the company writes 10,000 policies, then we can expect 95% of the profits to be within $\mu \pm 2\sigma$ = (\$300,000 **,** \$2,700,000). This is profitable.

(e) We assumed that each policy must be independent